

ABSTRACT

5 The present invention stably provides a high-
strength hot-dip galvanized steel sheet having a high
tensile strength and no non-plated portions and being
excellent in workability and surface properties even when
the employed equipment has only a reduction annealing
furnace and a steel sheet containing relatively large
amounts of Si, Mn and Al that are regarded as likely to
10 cause non-plated portions is used as the substrate. The
present invention: secures good plating performance even
when the steel sheet contains Si, Mn and Al by adding Ni
to a steel sheet, thus forming oxides at some portions in
the steel sheet surface layer, and resultantly
15 suppressing the surface incrassation of Si, Mn and Al at
the portions where oxides are not formed; enhances the
effect of Ni and accelerates the formation of oxides by
further adding Mo, Cu and Sn; and moreover, in the case
of a TRIP steel sheet, secures austenite by determining
20 the ranges of Si and Al strictly, avoiding the
deterioration of plating performance caused by the
addition of Ni, and further adding Mo in a balanced
manner.

25 In addition, the present invention, in a TRIP steel
sheet, improves press formability by regulating a
retained austenite ratio and accelerates the formation of
oxides by regulating a hydrogen concentration and a dew
point in annealing before plating.